

Appl. No. : 10/645,981
Filed : August 22, 2003

REMARKS

In the August 8, 2005 Office Action, the Examiner rejects Claims 1, 5, 6, 9, 10, and 13 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,781,871 to Park, et al. ("Park"); rejects Claims 7, 8, 11, 16, and 17 under 35 U.S.C. § 103(a) as obvious over Park; and states that Claims 2-4, 14, and 15 would be allowable if rewritten. Applicant requests reconsideration of the rejections in view of the following comments.

Amendments to the Specification

Applicant has amended paragraph [0016] to correct the spelling of iridium and manganese. No new matter is being introduced via this amendment.

Allowable Subject Matter

The Examiner objects to Claims 2-4, 14, and 15 as being dependent upon rejected base claims, and states that these claims would be allowable if rewritten in independent form. Applicant has rewritten Claims 2 and 14. Since Claims 3-4 depend from Claim 2, and Claim 15 depends from Claim 14, these claims no longer depend from a rejected base claim and have not been rewritten. Applicant requests the Examiner to withdraw the objection to Claims 2-4, 14, and 15.

Rejection of Claim 1 and 16

The Examiner rejects Claim 1 under 35 U.S.C. § 102(e) as anticipated by Park. Applicant has amended Claim 1 to recite that a "pinned magnetic layer" has the recited "plurality of domain wall traps." The Examiner rejects dependent Claim 16 as obvious under 35 U.S.C. § 103(a) over Park. Although dependent Claim 16 is not a dependent claim of Claim 1, these claims are discussed together for reasons which will be discussed. The Examiner asserts that column 4, line 21 to column 7, line 22 of Park teaches the claimed invention. Applicant has amended Claim 1 to clarify the claimed invention. The amendment to Claim 1 clarifies that the "pinned magnetic layer" of the claimed invention has "a plurality of domain wall traps." These amendments are supported by, for example, Claim 16 (now canceled) and by paragraphs [0022].

In rejecting Claim 1, the Examiner asserted that Park's "free layer 12" teaches the first magnetic layer, which Applicant has amended to clarify to read "pinned magnetic layer." The

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corresponding layer to the pinned magnetic layer is Park's "fixed layer 13." As Applicant explained in paragraph [0021], "[t]he pinned layer 100 of a given memory cell 140a-3 preferably has only a single magnetization direction." As Park explained in Col. 4, lines 39-40, "a magnetization direction 14 of the fixed layer 13 is fixed at a certain direction."

Applicant respectfully submits that Park does not teach or suggest "a plurality of domain wall traps" in connection with the fixed layer 13. Rather, Park discusses magnetic domain walls only in connection with a different layer, "[t]he free layer 12 has a magnetic domain wall" (Col. 4, lines 44-45). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," see MPEP § 2131, citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

It should be noted that "[t]he boundaries of the domains 120a-d are defined by a plurality of domain walls 130a-c" (paragraph [0020]), and that separate magnetic domains for layers other than the pinned layer, such as Park's "free layer 12," are a natural consequence of forming individual memory cells as Park acknowledges in "[t]he magnetic domain wall is naturally formed, or the width thereof may be adjusted..." (Col. 4, lines 45-46). Accordingly, with the above remarks, Applicant does not imply that the "plurality of second magnetic layers" are devoid of separate magnetic domains.

The Examiner appears to acknowledge that Park does not teach or suggest "a plurality of domain wall traps" in connection with the fixed layer 13 in the rejection of Claim 16 with 35 U.S.C. § 103(a). In rejecting Claim 16, the Examiner asserts that "[i]t would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the magnetic layer comprising a pinned layer, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art," and cites *In re Einstein*, 8 U.S.P.Q. 167 as support. The applicable section of the current M.P.E.P. appears to be §2144.04(VI)(A), citing *In re Gazda*, 219 F.2d 449, 104 USPQ 400 (CCPA 1955).

According to M.P.E.P. § 2144.04, "if the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court." Thus, Applicant respectfully submits that the Examiner must first compare the *facts* of the legal decisions to the *facts* of the present case before determining whether to apply the

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rationale used by the court. Applicant respectfully submits that the facts are not similar as described below.

In *In re Einstein*, a reference by Gordon "shows a spindle operated by pulleys and belts, and has a cam follower and a cam groove." In Einstein's arrangement, "the outer element bearing the cam follower is attached to the spindle and moves with it, while the inner sleeve bearing the cam groove is stationary."

In *In re Gazda*, the MPEP states that "[p]rior art disclosed a clock fixed to the stationary steering wheel column of an automobile while the gear for winding the clock moves with steering wheel; mere reversal of such movement, so the clock moves with wheel, was held to be an obvious expedient."

In each of the prior cases, the components that were reversed included moving mechanical parts that cooperated with each other. Applicant respectfully submits that in the mechanical arts, the movement between two objects is a relative relationship such that the reversal of those parts is readily understood. Applicant further notes that the foregoing reversal of elements kept the grinder and the clock operable for their intended purposes.

By contrast, magnetic layers are not mechanical parts with relative movement. Moreover, while the mechanical function of cooperating devices may remain the same when interchanged, the same is not necessarily true for the function of layers of electromagnetic devices. These layers do not have relative physical movement and instead have magnetic properties, not mechanical properties. Thus, the facts of *In re Einstein* or *In re Gazda* are not similar to this case.

Moreover, Applicant submits that the Examiner's proposed modification to Park would render it inoperable for its intended purpose. "However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose." See M.P.E.P. 2145 (III).

In a fixed or pinned layer, the magnetic orientation "is fixed at a certain direction" (Col. 4, lines 39-40). In a free layer, the magnetization direction 11 of a magnetic domain of the free layer 12 corresponding to the fixed layer 13 changes depending on the direction of the current," (Col. 4, lines 64-66). Applicant submits that due to the properties of these layers, the layers of

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the claimed invention could not be and are not "merely reversed" from the configuration taught by Park.

For example, reversing the free layer and the fixed layer would mean that the layer that should be fixed would not be able to retain its magnetic orientation, and the layer that should be free would not be able to change its magnetic orientation. Accordingly, such a device as suggested by the Examiner's modification of Park would be inoperable for its intended purpose. Accordingly, the Examiner's rejection of Claim 16 (now canceled) is improper.

Therefore, Applicant respectfully submits that Park, either by itself or as modified by the Examiner, does not teach or suggest Applicant's invention as defined by Claim 1, and Applicant requests allowance of Claim 1, as amended.

Rejection of Claim 13

The Examiner rejects Claim 13 under 35 U.S.C. § 102(e) as anticipated by Park. In particular, the Examiner asserts that Figures 1A-2B and 4 and column 4, line 21 to column 7, line 22 of Park teaches the claimed invention. Applicant has amended Claim 13 to clarify the distinctions of the claimed invention over the teachings of Park.

The amendment to Claim 13 clarifies that the "pinned magnetic layer" is the layer that is common to the plurality of magnetic memory cells and that the pinned magnetic layer is configured to "locate a magnetic domain wall between memory cells, rather than within a region of the pinned magnetic layer corresponding to a given memory cell" as claimed in amended Claim 13. This amendment is supported by, for example, paragraph [0022] and by now canceled dependent Claim 16.

Further, as described earlier in response to the Examiner's rejection of Claim 16, Applicant respectfully submits that the facts of *In re Einstein* or *In re Gazda* do not support an obviousness rejection over Park modified with the reversal of elements suggested by the Examiner in the rejection of Claim 16, and Applicant respectfully submits that such a modification would render Park's device inoperable for its intended purpose.

Therefore, Applicant respectfully submits that Park does not teach or suggest a pinned magnetic layer with such a configuration. Accordingly, Applicant requests allowance of amended Claim 13.

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Rejection of Dependent Claims

The Examiner rejects dependent Claims 5, 6, 9, and 10 under 35 U.S.C. § 102(e) as being anticipated by Park, and rejects dependent Claims 7, 8, 11, 16, and 17 under 35 U.S.C. § 103(a) as obvious over Park. These dependent claims add numerous additional distinctions over the prior art.

Applicant submits that the rejections to dependent Claims 5, 6, 9, and 10 are moot in light of the patentability of amended Claim 1. Accordingly, Applicant requests the Examiner to withdraw the rejection of Claims 5, 6, 9, and 10.

With respect to Claims 7, 8, 11, 16, and 17, Applicant has canceled Claim 16 and respectfully submits that the Examiner has not established a *prima facie* case of obviousness with respect to now amended Claim 1 or Claim 13, and could not establish the *prima facie* case of obviousness in light of Applicant's comments made in response to the rejections of Claims 1 and 16. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection of Claims 7, 8, 11, 16, and 17. Applicant also notes that Claims 7 and 17 were amended to correct the spelling of iridium and manganese.

New Claims

Applicant has added new Claims 22-23 herein to further define the invention as claimed. Claims 22 and 23 are supported by paragraph [0024]. Applicant submits that Claims 22-23 are also generic and would read on the elected tunneling magnetoresistance memory cell species. Applicant also requests allowance of Claims 22-23.

Rejoinder

In view of the patentability of Claim 1, Applicant requests rejoinder of previously withdrawn Claim 12 as discussed in M.P.E.P. 821.04(a).

SUMMARY

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner to withdraw the objections to pending Claims 2-4, 14, and 15 and the rejections to

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Claims 1, 5-11, 13, and 17. Applicant further requests the Examiner to allow Claims 1-15 and 17 and new Claims 22-23 and to pass the present application to the issue process.

If there is any further impediment to the prompt allowance of the present application, Applicant requests the Examiner to call the undersigned attorney of record at 310 407 3466 or at the telephone number listed below to resolve any such impediment.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: October 31, 2005

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